

REMARKS

The present application had claims 18-21 pending. Applicant has amended claims 18 and 21. Thus, claims 18-21 are currently pending. Applicants request that the pending claims be reconsidered.

Drawings

The Examiner advises that since the sequence listings will be published as part of the patent, and in order to reduce redundancy, any Figures which consist only of nucleic acid or protein sequences that have been submitted as sequence listings should be deleted. The Examiner specifically suggested the deletion of Figures 1, 2, 3b, 4b, 5b, 6b, 9b, 10b, and 11b. Applicant has amended the drawings to delete the listed Figures. No new matter has been added by the amendments. Further, Applicant has renumbered the remaining Figures as indicated in the Amendments to Drawings section of this Response. Also, Applicant has amended the specification to remove references to the Figures which have been deleted from the application and update the Figure numbers for the remaining Figures which have been renumbered. Accordingly, Applicants respectfully request that the objection be reconsidered and withdrawn.

Title

The Examiner states that the title of the invention is not descriptive. Applicant has amended the title of the invention to that suggested by the Examiner. Accordingly, Applicants respectfully request that the objection be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 101

The Examiner rejected claims 18-21 under 35 U.S.C. § 101 because the claimed invention allegedly is not supported by a specific, substantial, and credible asserted utility or a well established utility. Applicant directs Examiner's attention to pages 27-28 and page 33, lines 3-6, which identify the homology to known Arrestin. Applicant directs Examiner's attention to Examples 2-5 on pages 42-45 of the specification as originally filed. Within those positions in the specification, and within the references cited therein, Applicant asserts specific and substantial utility for the claimed invention, and the well-established utility thereof. Examiner correctly states that SEQ ID NO 2 has homology to known Arrestins. Based upon Applicant's disclosure and the Examiner's search, there is no reason to doubt the assertion that SEQ ID NO 2 encodes Arrestin. Further, Arrestins have a well-established use in biology based upon the protein's ability to participate in the olfaction cascade.

In paragraph 16, the Examiner states that the asserted utility is not substantial. However, to be substantial, a utility needs only to define a "real world" use. M.P.E.P. § 2107.01. Here, the claimed polypeptide has homology to a known and well-established class of proteins, and the claimed polypeptide may be used in an assay to identify compounds which interfere with the olfaction cascade. It is noteworthy that the Examiner acknowledges in paragraph 12, second sentence, that the asserted utility is credible. Per M.P.E.P. § 2107.01 III, "if the asserted utility is credible, there is no basis to challenge such a claim on the basis that it lacks utility under 35 U.S.C. 101." Further, since a reasonable correlation between the activity in question and the asserted utility exists, no further confirmation of the properties of the protein or conclusive evidence of operativeness are necessary to meet the threshold of utility. See M.P.E.P. § 2107.03 and § 2107.01

III and cases cited therein. Accordingly, there is a well-established utility associated with the claimed invention. Thus, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 112

The Examiner rejected claims 18-21 under 35 U.S.C. § 112, first paragraph. Applicant has amended claims 18 and 21. No new matter has been added by the amendments. Support for the amendments is found at least on page 30 of the specification. Applicant has amended claims 18 and 21 to further clarify the claim scope. With reference to paragraph 18 of the Office Action, Applicant believes the claimed invention is supported by a well established utility for the reasons set forth above. With reference to paragraphs 19-28 of the Office Action, Examiner's previous interpretation of the scope of claims 18-21 was overly broad. Applicant, as noted in the currently amended claims, is claiming "an amino acid sequence of which comprises at least 40 consecutive residues of SEQ ID NO: 2." Stated another way, such claim language includes any polypeptide having at least 40 consecutive residues of SEQ ID NO: 2. Such claim language does not include "any polypeptide that is at least 20 residues long and comprises as few as one amino acid residue of SEQ ID NO: 2" as suggested by the Examiner in paragraph 20. Such an interpretation would include any polypeptide that is at least 20 residues long and includes any one of the amino acids present in SEQ ID NO:2. Applicant believes that the Examiner's overly broad interpretation of the claims resulted in an overly broad claim scope which resulted in rejections under 35 U.S.C. § 112, first paragraph. Applicant believes that the specification supports the currently pending claims. Accordingly, Applicant respectfully requests that the rejections be reconsidered and withdrawn.

With reference to paragraphs 22-28 of the Office Action, the current specification certainly provides a disclosure that would allow the skilled artisan to practice the claimed invention without undue experimentation and provides a written description of the claimed invention. Applicants direct the Examiner's attention to pages 24-32 of the specification, in addition to the remainder of the specification, to obtain information regarding how to make and use the currently claimed invention, as currently amended. Further, specific guidance with regard to conservatively modified amino acids is provided on pages 30 and 31. Accordingly, Applicant respectfully requests that the rejections be reconsidered and withdrawn.

Rejections under 35 U.S.C. § 102(b)

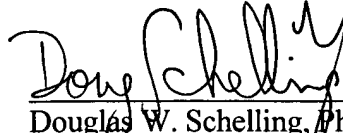
The Examiner rejected claims 18 and 21 under 35 U.S.C. § 102(b) as allegedly being anticipated by Hyde et al. Applicants have amended claims 18 and 21. No new matter has been added by the amendment. Support for the amendment is found at least on page 30 of the specification. Pursuant to M.P.E.P. § 2131, and case law therein, a claim is anticipated when each and every element of the claim is found in a single prior art reference. Hyde et al. does not provide all of the limitations of the amended claims. Thus, Applicant respectfully requests that the rejections be reconsidered and withdrawn.

Applicant has merely commented upon certain aspects of the invention and reserve the right to provide further comments as necessary. Applicant notes that these remarks should not create limitations to the claims and that the claim language itself should be considered.

Should the Examiner feel that a telephone conference with Applicant's attorney would advance the prosecution of the application, he is invited to call the undersigned at 901-537-1049.

The Commissioner is authorized to charge any deficiency or credit any overpayment associated with the filing of this Response to Deposit Account 502346.

Respectfully submitted,



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Should additional fees be necessary in connection with the filing of this paper, or any future papers, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No 502346 for any such fees; and applicant hereby petitions for any needed extension of time.



APPLICATION NO. 10/056,405
DOCKET NO. N7841

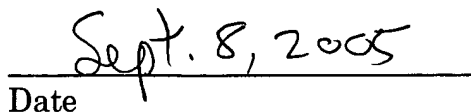
CERTIFICATE OF FIRST CLASS MAILING

I hereby certify that this Response and Amendment, including Certificate of First Class Mailing (13 pages), Extension of time to reply (2 pages, one original and one copy), Replacement and Annotated Drawings (37 pages) and a self addressed return post card are being deposited with the United States Postal Service, postage prepaid, as first class mail in an envelope addressed to:

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Douglas W. Schelling


Signature


Date

Amendments to the Drawings:

The attached sheets of drawings include the deletion of several Figures and the renumbering of the remaining Figures. These sheets replace the original sheets including Figures 1-11. Figures 1, 2, 3b, 4b, 5b, 6b, 9b, 10b, and 11b have been deleted. The remaining Figures have been renumbered as follows: 3a to 1, 4a to 2, 5a to 3, 6a to 4, 7 to 5, 8 to 6, 9a to 7, 10a to 8, and 11a to 9. Regarding previous Figure 8, renumbered as Figure 6, the right hand column providing references to the deleted Figures has been removed.

Attachment: Replacement Sheet
 Annotated Sheet showing changes

5 ttaaatacgttctctatatttcag CACCTCTTAAAGATCTTCACATCAACCTCCGAAGCTGCTTTCGAAAGCTTACCCCTAAAT
CTTCACACATTTTTCACAGgtatgtaattatgctgtggtatttagcttgaaataagctacaaactttgaaagtaattt
caatctgtttttagtag ATTATCTCAACCTATTCGCTACTCCCTATCTGCCCCCTACTTCACACCATCCGAATTCACAGATATCCGCT
CTAAATATCCCTTATGTTGAAATTATATTTTGTTAGATTTATTGCATAAAGTAaTaTTTAATTTTATACATCAAACGT
AAGCCCGCTaGTTTTCAATTAGCCTTTTCCAAAATTTATCAAATTGATTTTGAATTGATTGCAGAGTTTCAGGAATT
TAATCTGATAGGATATCTTGTTTATCCAATAGAGGTGTGGAAGCGTTCCCAAGCCATTGCTTTGATAGTTTATAGCA
CCGTCGAGCAGTTGATCGCTGTGATCGCTAGGCGCACCTGATTTTATCTTTATCTCGCACCTGTTATGGCAAGGGCG
CTTTTCACACGTTTTCACACAATATAATGCACATGTATAATGCATTCTTACTTTAGCATTTTTGTACATATAATACC
AAAATTATGCATTTTATTCTCACGCAACGATTAGAGGATGACTTcACAAAGGTCCATCTAGTGGTAGGAGGTATAC
10 AATTATACCTCTCAAATCTCACAGCAtAATGAGAAACAAAAGGATACCAAGCATACCCTTTTTTTACTTGACAATT
TCATTTGATTTATGTAATAAAGCACTGCaCGTCGACTTCCTAAAA

Figure 1 continued

Renumber Figure

5

5) Exons are highlighted.

50

ttccagtaatccataataaaaaataataaagtaataaataagtaataatccagtaactgtagtaatac
acaataatctctaagaattaaaattgcatttttgtaatgaaatatgttgattgttcgaatagttcagaaaaacttaaa
aatgcctcagcattaaacagtttttgaggttggttcagggcatttagtttagatatttttagtattttaagcatttggt
5 ttcattactacaaaaaagcaaatttatgagtgaattactttcagttcttctaaacgcctatgtgtatgcaattacat
aacaatagctctctttttttattgcatttttcccttagtaatctaaatccaatctcttctttccctcttgag
6 TTTAAAT
GTTCGGCAACCTGTAACCCGATGACGGTTCGCAATGCTTTTCAAAAATTCCTCAACGTCCTCCCTACTCCCTATTTCACACTGCT
7 CCCCCGAGTGTACAACTAATAACCGGTAAACAAACAAAAATCCCCTCATCACTATGCAAAGACAGCAAGCAGCC
8 GATCATCAAACACCATTAGCAGCCACAAAGTTACCAGCCGCTTATCCCACGGGATTTGGTGGAAAGTTATTGCACTG
9 AAGCTCTTTTACCCAAATTTTCATGGAGGTTCCCTCTCAACCAACCCATTGAAGCGAATAAAAGTATCAGCAACCAG
10 GCGACGGTGAAAAACGCTGCATTATTGTGCTTGCTTCAGCATTCCAGCGAATGACTCTTAAACTTTTCCATTCAAA
AGTCGCGATGCTCACGATACGGAGCGGTGTGTTGTTTCGATCCGCCGAGTGCCTCGCAAGCCGGTGATGTTGCCGGT
GGAAATGCACAGATCGACACAGCGATAGATAATCGTTTGTTCGCGTAAATGGGAGGGAAAAAGTAAGCTGCCAGCT
ACTTCATTTCCATGTTAATTGAACTCAAGCCAACGAACATGCAGAACCCGGTTGGTTGTGTGTCTCCGCTCCGGGA
AAGGTCTCTGCTCCGGGGCATGGATTCTTTCCCCCTCCGGGTGGTTGGGGGTATTGTTTAGGTTTTTATTTTACAAA
15 TTCATATCCTTCCGCTTCCGCATCAGCCGACCCGGTGGGTGCGCCAGACAGATGTGCGGCGGGCAACAAAACATATGC
ACGAACATGGCCAACAAACACAGCTTCTATCTCATCTCTGTGTGCGACTGTCTCGCTTTCCCGCTGCGTTGCTTGTA
GTACTATCATTGTTTTTAGTCCACGGGTTTACTTCTAATTCCATTGCACCACGCAAAAAGGCTCATCCTTTGCTCGTT
CCGGTTGCAACTTCGACAAGCGCATGGTTGGGATACGAACAAAAACCAACTACTCCACCCACTACTACTACTG
CCACCACCACTAACAACACTACACTTGGTTGGGAGCTTGCAGACCCACAAGCAAAACAACGATACAAGCTAGCTAGCT
20 GCTGTGTGCGCTCGAGTCAGCCGACGGTACAAGGTTTAACCGGTACAAGCAACTCCCGGACCGATCCCAAACTCTG
ACAAGGCACGGGGCCGCATCCGGCAGTACGGTCGGAAAACATGGAAATGTTTAATTAATAAACTGTAATTGTCAATCGC
TGCTACAAGTTGTGACACAGGGAGAGAGAGAGACAGAGCGCGCCGATGGTGATGGTGTAAGATAGATACAGGAA
AAGAGCGAGAAACATTGGTACGATTTGGTGTGGTTAGCAAATTTGATTTCCACTGATTTTGAAGTCAAATTTAATGC
ATCGAAAATTTGCCATTACGGGTAAAGTTGCTCGTGGACGGATCCCCGGGCTGCAGGAATTCGATATCAAGCTTAT
25 CGATACCGTCGACCTCGAGGGGGGGCCCGGTACCCAGCTTTTGTTCCTTTAGTGGA

Figure 2 continued

Renumber figure

Figure 3 *Remember figure*

Anopheles gambiae odorant receptor 3 genomic sequence (SEQ ID NO: 11)

Features:

- 1) Presumed Untranslated 5' and 3' regions are underlined.
- 2) Putative Start (ATG) and Stop (TAA) codons are in **BOLD**.
- 3) Introns are tentatively assigned and are shown in lower case.
- 4) Exons are highlighted.

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AAGCAGAACACATCAAGAAGCAATTAGGTGTGTCGTACGTTAGCAAGTAGTTCGCGAGGAGGAATAAAATAGATGCC
TTCTGAGCGGCTTCGTCTCATTACTTCCTTCGGAACCTCTCAAGACAAACGCACGATGGTACTGCCAAAATTAAAGG
ATGAAACAGCAGTGATGCCGTTTCTGCTGCAAATTCAAACCATTGCCGGACTGTGGGGTGACCGTTCCACGCGGTAC
CGTTTTTATCTCATCTTTTCTACTTCTGCGCGATGGTGGTTCTACCCAAAGTGCTGTTTCGGTTATCCAGATCTCGA
GGTTGCGGTACGCGGCACGGCCGAGCTGATGTTTGAATCGAACGCATTCTTCGGCATGCTAATGTTTTCTTTCAAC
GCGACAACCTACGAGCGATTGGTGCATCAGCTGCAGGATCTGGCAGCTCTAGgtgagtatgcagccaatcgattgttc
caaaccttcgcaacatccttcgtaacactgctacactttcagTCCTCCAAGACCTACCCACAGAGCTGGGAGAGTAC
CTGATCTCAGTGAACCGACGGGTGCGATCGGTTCTCCAAAATTTACTGCTGCTGTCACTTTTCCATGGCAACGTTCTT
TTGGTTTCATGCCCCTGCGACGACCTATTCCGCCTACTTTGCTGTGCGCAACAGCACGGAACCGGTGAGCACGTTG
TGCACCTCGAGGAAGAGCTGTACTTCTGAACATTCCGACTTCGATGGCGCACTATACGTTTTATGTGGCCATTATG
TGGCCACGATCTATACGCTCGGGTTTACCGGTGGCACAAGCTGCTGACCATTTTCAGCAATGTTAAGTACTGTTT
GGCCATGCTGAAGCTCGTTGCACTCCGAATCCACTGTCTAGCGAGAGTAGCGCAAGACCGAGCGGAAAAGGAGCTGA
ACGAGATTATTTCCATGCATCAGCGGGTACTCAAgtaagtaaattcaaattgaaagtttgcaggaataaacttgag
tgtgtctgaccgctgcacatcctagCTGCGTGTTCCTGCTGGAGACGACATTCCGCTGGGTATTTTTCGTGCAGTTC
ATTCAGTGTACAATGATCTGGTGCAGTCTCATCTCTACATAGCGGTGACGgtaatagcattttcgtcatttcgtta
gccttattcaatccatttttgtgaacgtgaatttccccagGGGTTTCAGCTCGACGGTAGCGAATGTATGTGTCCAG
ATCATTTTTGGTGACGGTGGAACTTACGGCTACGGCTACTTCGGAACAGATCTAACCACGGAGGTGCTTTGGgtacc
ctttggatgaagcttcaaaaagtaattccaaattctgttttcgatttttccccctttccactagAGCTATGGCGTTG
CCCTCGCCATTTACGATAGCGAGTGGTACAAGTTTTCATTTTCGATGCGCCGCAAACTTCGACTGCTACTGCAACGA
TCCCAAAAACCGCTCGGCGTAACGGCGGGAAAGTTTCGCTTCGTCAATGTGGCCAGTTTGGCAAGgtaacattaat
tacagtttgaaaattctgaagaatgcacatcttacttgcttacttggtgttccagATGCTCAAGATGTCCTATTTCATT
TTACGTAGTACTGAAGGAGCAGTTTtaggagctgctgtttccaccctGGAAATGGCCTTTTCGCACTGTCTTCTGT
TTGTTGGACGCACGCAGCACCGAGAGCGCCCTGCACGCACTGACGTATTTTGGCTACTTTGACGTTTGACCTTTG
ACAGCTGAAGGACAGGGTACAATTTTGTCTGCTGTTATTACGCGCAGCGCATTGGATACGAAAACATTGGCCACAAG
TTCTACGATTTTAGCGTTTATTACTGTTTCGTAGCAGCTTTTTTCCaCAATAAACACACACAATAACGTACCGACAG
TATTCTTTTCATTGTAGGATAGAGAAGCCCGCCGCGCAGCCAAAACGCGCCGCAAAACGAAAGGCGGCACCACCG
GGGAAAAACACGGGAGCAAAACGAGAACAGAACGCAGTAAACAACAAAACCGGCCGGAACAACAACGGTGCCGAA
ACGA
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Figure 4 *Renumber figure*

Anopheles gambiae odorant receptor 4 genomic sequence (SEQ ID NO: 12)

5

Features:

- 1) Putative Start (ATG) and Stop (TAA) codons are in BOLD.
- 2) Introns are tentatively assigned and are shown in lower case.

10 GGGGAACTCCCCACCCGACCAGACGACGAAAGCTAACGATGTGCAATTGAATAGTCATTAGT
AGCGTTTTTGCTCGCAAACGAACTAACCCCTTTGACTTTTTTAAGTTCACTACGGTGAGGACAAAA
TCAATAAATTAAATCGAGACCGTTGATGAGCAAAAGAAAAAAATATTTTACTGATTTTCATTT
CGTTCCATCGACTACATAATCATAATTATATGCCACATTTTATTATAAGTTTTTGTATCATTTTTTA
15 AACAAACAAAAATGCATCCTTTTCGAATATTAGTCAGGTTGTATCAACAATGAAGTTTGAAGTGT
TTCAAAAATATTCTCCCCGACACGGTCTTATCCTTCGTGCTAAGGCTTTTGCATATCGTGGGC
ATGAATGGGGCAGGATTTTCGGTCGCGAATTCGAGTTGGTGGCATTTTTCTGTTCTATTTAATCTT
TCTTGTAATACCGCCACTAACGGGCGGGTACACCGATGGTCACCAGCGTGTACGCACCAGTGTG
GAATTCCTGTTTAATTGCAATATTTACGGCGGCAGTATGTTCTTTGCCTACGATGTGGCCACTTT
CCAAGCGTTCATCCAGGAACTGAAGAGCCTTTTCGGTTTTGGGtaatatattaattaataaattgcgtttattgcat
20 catcatttgtttctctttgcagTATGCTCACATTCGTACAGACTAAAGTATAAGCTGACCCGGTTCAACCGTC
GAGCGGATATTATCGCCAAAGTGCAAACGACCTGCATGGGTGCTGTAACGCTTTTCTACTGGAT
TGCACCGATACCTTCCATCTGTGCGCACTACTACAGGTCGACCAATTCCACCGAACCCGTGCGG
TTTGTGCAACATTTAGAGGTGAAGTTCTATTGGCTCGAGAATCGCACCTCAGTCGAGGACTACAT
AACCTTCGTGCTGATCATGCTACCCGTCGTGGTTATGTGTGGTTACGTATGCAATTTGAAGGTGA
25 TGACCATCTGCTGCAGCATTGGACACTGTACACTGTACACCAGGATGACTATAGAGATGGTAGA
GCAGTTGGAAGCATGGCATCAGCGGAACGAACTGCCAGCGCCATACGCAACGTGGGGCAGAT
GCACAGTGGTTTACTGAAATGCATTAGGCTTTTGAACACGTCAATCCGATCGATGCTGATGCTGC
AGTGGTTGACCTGCGTGTTAACTGGAGCATTTCTCTCATCTATCTAACGAACGTGGtttagtttgcctt
gtttgaaatccaaaaacaaaaagatggctataattgaactttctattacagGGCATCTCGCTACAATCGGTTACCGTGGT
30 GGTAATGTTTTTTCTTGCCACTGCGGAAACTTTCTGTATTGTTTACTTGGGACGCGGCTTGCGA
CACAACAGCAGCTGCTGGAGCACGCACTCTATGCTACACGGTGGTACAACCTACCAATAGCCTT
TCGCAGCAGCATTAGGATGATGTTGAGACAGTCGCAAAGGCATGCACACATAACGGTGGGGAAG
TTTTTTCGCGTTAATTTGGAAGAATTTAGCAGGATTGTCAACTTATCCTACTCTGCTTACGTCGT
ACTTAAGGATGTAATAAAGATGGATGTACAGTGAATGTTTTTTTTTTGGCTTGGCAACGAATGA
35 AGTTTTCCGAATCTATATTAGATCTAGAATTTAATCTAGATGTCATAATATGATCTTGGCCATGA
CCGTTTCTGGTTTTTGAACCAATTCTCAAAACAATTTTGAACCTAGGGCGAGGCATGAAATGTC
CCAAGAACCTATCCAAGTTCTGGAACCTACATATTACCGAATCTATCCCATATTGCCTCGGAACT
GGTTTGGTGCTAAATATTTGTCCAAATGTTGGTCCTGGACCTATCCAGACAAAGATCTTCAATTA
TTCCTACCACTGGAACCTGATTAATTGATGTAGGAAGTCATGGAGGTGTTCAAGGAGAATTTAAA
40 CACTAATGTTCCAACCTCATTATTTCAAGGGCAATTCTATTTTTTATATGCCCCTACGGATTGATAC
GTATGTATTACTCCATTTCTGGACTTTGTCTTATTCTTGCTGCTGATTGGACGTGAAATGTTGA
GAAAAAGATTCTTATTTATGAGTGATACAGAGCCTTTAAATACTCCTACGTTGTTTGCTATTTAA
GTATGGCCAGGCTAATCACAATCGCTACTAATGAACAGAATCTCTTCTAATTAAACCCCTTTCGAT
TGATAGTGTCAATGTCAATGTGAGATAATTGAACTGCAAACgATACCTACCTTAAACGGAGCAG
45 AACACATCAAGAAGCAATTAGGTGTGTCGTACGTTAGCAAGTAGTTTCGCGAGGAGGAATAAAAT
AG

50

Figure (5) - Remember figure

ANOPHELES GAMBIAE

Preferred DNA Codons

Amino Acids			Preferred Codons							
Alanine	Ala	A	GCC	GCG	GCT	GCA				
Cysteine	Cys	C	TGC	TGT						
Aspartic acid	Asp	D	GAC	GAT						
Glutamic acid	Glu	E	GAG	GAA						
Phenylalanine	Phe	F	TTC	TTT						
Glycine	Gly	G	GGC	GGT	GGA	GGG				
Histidine	His	H	CAC	CAT						
Isoleucine	Ile	I	ATC	ATT	ATA					
Lysine	Lys	K	AAG	AAA						
Leucine	Leu	L	CTG	CTC	TTG	CTT	CTA	TTA		
Methionine	Met	M	ATG							
Asparagine	Asn	N	AAC	AAT						
Proline	Pro	P	CCG	CCC	CCA	CCT				
Glutamine	Gln	Q	CAG	CAA						
Arginine	Arg	R	CGC	CGG	CGT	CGA	AGA	AGG		
Serine	Ser	S	TCG	AGC	TCC	AGT	TCT	TCA		
Threonine	Thr	T	ACG	ACC	ACT	ACA				
Valine	Val	V	GTG	GTC	GTT	GTA				
Tryptophan	Trp	W	TGG							
Tyrosine	Tyr	Y	TAC	TAT						

5

[http://www.kazusa.or.jp/codon/cgi-bin/showcodon.cgi?species=Anopheles+gambiae+\[gbinv\]](http://www.kazusa.or.jp/codon/cgi-bin/showcodon.cgi?species=Anopheles+gambiae+[gbinv])

Figure 6

Remember figure.
Delete column

Name	SEQ ID NO
Arrestin 1 (cDNA)	SEQ ID NO: 1
Arrestin 1 (polypeptide)	SEQ ID NO: 2
Odorant Receptor 1 (cDNA)	SEQ ID NO: 3
Odorant Receptor 1 (polypeptide)	SEQ ID NO: 4
Odorant Receptor 2 (cDNA)	SEQ ID NO: 5
Odorant Receptor 2 (polypeptide)	SEQ ID NO: 6
Odorant Receptor 3 (cDNA)	SEQ ID NO: 7
Odorant Receptor 3 (polypeptide)	SEQ ID NO: 8
Odorant Receptor 4 (cDNA)	SEQ ID NO: 13
Odorant Receptor 4 (polypeptide)	SEQ ID NO: 14
Odorant Receptor 5 (cDNA)	SEQ ID NO: 15
Odorant Receptor 5 (polypeptide)	SEQ ID NO: 16
Odorant Receptor 6 (cDNA)	SEQ ID NO: 17
Odorant Receptor 6 (polypeptide)	SEQ ID NO: 18
Odorant Receptor 7 (cDNA)	SEQ ID NO: 19
Odorant Receptor 7 (polypeptide)	SEQ ID NO: 20

Figure 7 *Renumber figure*

Anopheles gambiae odorant receptor 5 genomic sequence (SEQ ID NO: 21)

5

Predicted Exons: *ITALICIZED*, UNDERLINED AND **HIGHLIGHTED**.
Introns: lowercase.

10 tctagactgaacccatgacgggcattttattgagtcgttcgagttgacgactgtaccacgggaccaccgttatcactatcactatt
aattaattataatatgctttttagcgatcagcctaccgggtttgtttctctggatatcttaagttccatttgattatcaagatagaa
caacaactgtaccttaaataatcattacgtacccttaatcaacctgtgcatcaaggagtttcgcgaaagcaaaaatccgattgtct
gatgtgtcttgattccatccgattcgttactggttctgcaaaatcgccaataatcgccaatgtccttatcgatgcttgaatcaacat
cacattgtttgcatttcgtttttgcggtgcaaatatgttatttgcgaagaaggcaaggtaatgtgcttaagagtaataacaattcgctg
15 tccattttttgcccaccagtgtgccagaacccgtgccttttagtcttcgaatacatccgaccagtcagcaagcaagtgcattc**ATGG**
TGCTACCGAAGCTGTCCGAACCGTACGCCGTGATGCCGCTTCTACTACGCCCTGCAGCG
TTTCGTTGGGCTGTGGGGTGAACGACGCTATCGCTACAAGTTCCGGTTGGCATTTTTA
AGCTTCTGTCTGCTAGTAGTTATTCGGAAGGTTGCCTTCGGCTATCCAGATTAGAGAC
AATGGTTCCGCGAACAGCTGAGCTGATTTTCGAATGGAAACGTA**CTGTTTGGGATGTTG**
20 **CTGTTTTCTCTCAAGCTAGACGACTATGATGATCTGGTGTACCGGTACAAGGACATATC**
AAAGATTGgtgctgataatgattgataaaaggaacctttgagcaactcctatcccttcaag**CTTTCGGTAAGGAC**
GTTCCCTCGCAGATGGGCGACTATCTGGTACGCATCAATCATCGTATCGATCGGTTTTTC
CAAGATCTACTGCTGCAGCCATCTGTGTTTGGCCATCTTCTACTGGGTGGCTCCTTCGT
CCAGCACCTACCTAGCGTACCTGGGGGCAACGAAACAGATCCGTC**CCGGTCGAACATGT**
25 **GCTACACCTGGAGGAGGAGCTGTACTGGTTCACACCCGCGTCTCGCTGGTAGATTAC**
TCCATATTACCGCCATCATGCTGCCTACAATCTTTATGCTAGCGTACTTCGGTGGACT
AAAGCTGCTAACCATCTTCAGCAACGTGAAGTACTGTTCCGGCAATGCTCAGGCTTGTG
GCGATGAGAATCCAGTTCATGGACCGGCTGGACGAGCGCGAAGCGGAAAGGAACTGA
TCGAAATCATCGTCATGCATCAGAAGGCGCTAAAgtaaggctgcccgtatgttgatagaatacattt
30 ctagctgctttcag**ATGTGTGGAGCTGTTGGAAATCATCTTTCGGTGGGTTTTCTGGGACAG**
TTCATACAGTGCGTAATGATCTGGTGCAGCTTGTTCTGTACGTCGCCGTTACGgtaacta
aaagcactgtagtgatctgtctgccacaccattcactgctgtgtcttgtttgtcactcttccag**GGTCTCAGCACAAAAG**
CGGCAACGTGGGTGTA**CTGTTTATACTGCTAACAGTGGAAACCTACGGATTCTGCTA**
CTTTGGCAGTGATCTTACCTCGGAGGCAAGTTGTTATTCCGCTGAgtttcagttacttttcggttcccc
35 tctaaccgtaccactgtaccatttgtttgagacagagcttgagcgtag**CACGTGCTGCGTACGGTAGCCTCTGG**
TATCGCCGTTCCGGTTTCGATTCAACGGAAGCTTCGAATGGTACTGCAGCGTGCCGAGA
AACCGGTCCGCATCTCGGCTGGGAAGTTTTCGTTTCGTTCGACATTGAGCAGTTTGGCAA
Tgtatggggagaccttcactgtggcaagaaagattttcttattaatgcatcttttaatttacag**ATGGCAAAAAACATCA**
TACTCGTTCTACATCGTTCTGAAGGATCAATTTTAAaggggaaactccccaccgaccagacgacggaa
40 agctaacgatgtgcaattgaatagtcattagtagcgtttttgctcgaaacgaactaaccctttgacttttaagttcactacggtgag
gacaaaaatcaataaattaaatcgagaccgttgatgagcaaaagaaaaaaatattttactgattttcatttcgttccatcgacta
cataatcataattatatgccacattttattataagttttg

Figure 8 Renumber figure

Anopheles gambiae odorant receptor 6 partial genomic sequence (SEQ ID NO: 22)

- 5 These are the predicted last three exons of another candidate *Anopheles gambiae* odorant receptor.

Predicted Exons: *ITALICIZED*, UNDERLINED AND **HIGHLIGHTED**.
Introns: lowercase.

10
aacacccatcttatcggaattagtagtattaccgtttgaaagcggcttcccttcctggctgtttctcactctctctctctgtctctctta
ttgatgccgtatgcgcgcgtgctataggctagTTATGCTTACCGGATGTTGCGATCGCGACGTGCTTT
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25 caagccgcgtcacctgctggc

Figure 9 Remember figure

Anopheles gambiae odorant receptor 7 genomic sequence (SEQ ID NO: 23)

Features

1. Predicted Exons (7): ALL CAPS, ITALICIZED, UNDERLINED
HIGHLIGHTED
2. Introns (6): lowercase
3. 5' and 3' sequences: lowercase, dotted underlined

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Renumbered figure

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Renumbered figure

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Figure 9 continued

Renumbered figure

Figure 1 This original figure
is cancelled.

Anopheles gambiae arrestin 1 cDNA sequence (SEQ ID NO: 1)

5
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35 GTAAC TCGACCAAATGCCTAGCTGAATGTTGTTGAACGAGTTATGTACATCAAAAGATTGAATA
AAACAAAAA

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Figure 2

This original figure
is cancelled.

Anopheles gambiae arrestin 1 amino acid sequence (SEQ ID NO: 2)

5

MVYNFKVFKKCAPNGKVTLYMGKRDFVDHVSGVEPIDGIVVLDDEYIRDNRKVFGQIVCSFRYGR
EEDEV MGLNFQKELCLASEQIYPRPEKSDKEQTKLQERLLKKLGSNAIPFTFNISP NAPSSVTLQQG
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10 QPGSSLQKVMYLTPLLSSNKQRRGIALDGQIKRQDQCLASTTLLAQP DQRDAFGVIISYAVKVKLFL
GALGGELSAELPFVLMHPKPGTKAKVIHADSQADVETFRQDTIDQQASVD FE

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Figure 3b

*This original figure
is cancelled*

Anopheles gambiae odorant receptor 1 amino acid sequence (SEQ ID NO: 4)

5

MKKDSFFKMLNKHRLWCLWPPEDTDQATRNRYIAYGWALRIMFLHLYALTQALYFKDVKDIND
IANALFVLMQTQVTLIYKLEKFNYNARIQAQLRKLNCTLYHPKQREEFSPVLQSMGFWFLMIFLM
FVAIFTIIMWVMSPAFDNERRLPVPAWFPVDYHHSDIVYGVLFLYQTIGIVMSATYNFSTDTMFSG
LMLHINGQIVRLGSMVKKLGHDVPPERQLVATDAEWKEMRKRIDHHSKVYGTMYAKVTECVLF
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TEFVGFSNYFKFDKRTSQAMIFFLQMTLKDVIKVGSVLKVTNLHTFLQIMKLSYSLAVLQSM
ESEZ

10

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Figure 4b

This original figure
is cancelled.

Anopheles gambiae odorant receptor 2 amino acid sequence (SEQ ID NO: 6)

5

MLIEECPIIGVNVRVWLFWSYLRRPRLSRFLVGCIPVAVLNVFQFLKLYSSWGDMSELIINGYFTV
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AALKQRLGRLGRHSGTMASTGHSAGTLFAELKECLKYHKQIIQYVHDLNSLVTHLCLEFLSFGM
10 MLCALLFLLSISNQLAQMIMIGSYIFMILSQMF AFYWHANEVLEASLGIGDAIYNGAWPD FEEPIR
KRLILIIARAQPTDGGKIKVGNVYPMTLEMFQKLLNVSYSYFTLLRRVYN

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Figure 5b

*this original figure
is cancelled*

Anopheles gambiae odorant receptor 3 amino acid sequence (SEQ ID NO: 8)

5
MPSERLRLITSFGTPQDKRTMVLPKLKDETAVMPFLLQIQTIAGLWGDRSQRYRFYLIFSIFCAMV
VLPKVLFGYPDLEVAVRGTAELMFESNAFFGMLMFQFQRDNYERLVHQLQDLAALVLQDLPTL
GEYLISVNRRVDRFSKIYCCCHFSMATFFWFMPVWTTYSAYFAVRNSTEPVEHVLHLEEELYFLN
10 IRTSMAHYTTYVAIMWPTIYTLGFTGGTKLLTIFSNVKYCSAMLKLVALRIHCLARVAQDRAEKEL
NEIISMHQRVLNCVFLLETTFRWVFFVQFIQCTMIWC SLILYIAVTGFSSTVANVCVQILVTVETY
GYGYFGTDLTTEVLWSYGVALAIYDSEWYKFSISMRRKLRLLLQRSQKPLGV TAGKFRFVNVAQF
GKMLKMSYSFYVVLKEQF

15

Figure 6b

*This original figure
is cancelled.*

Anopheles gambiae odorant receptor 4 amino acid sequence (SEQ ID NO: 14)

5

10

MKFELFQKYSSPDTVLSFVLRLRHIVGMNGAGFRSRIRVGGIFLFYLIFLVIPPLTGGYTDGHQVR
TSVEFLFNCNIYGGSMFFAYDVATFQAFIQELKSLSVLVC SHSYRLKYKLTRFNRRADI AKVQTTC
MGAVTLFYWIAPIPSICAHYYRSTNSTEPVRFVQHLEV KFYWLENRTSVEDYITFVLIMLPVVVMC
GYVCNLKVM TICCSIGHCTLYTRMTIEMVEQLESMA SAERTASAIRNVGQMHSGLLK CIRLLNTSI
RSMLMLQWLT CVLNWSISLIYLTNVGISLQSVTVVVMFFLATAETFLYCLLGTRLATQQQLLEHAL
YATRWYNYPIAFRSSIRMMLRQSQRHAHITVGKFFRVNLEEF SRIVNLSYSAYVVLKDVIKMDVQ
NVSYSYFTLLRRVYN

15

Figure 9b

*This original figure
is cancelled*

Anopheles gambiae odorant receptor 5 amino acid sequence (SEQ ID NO: 16)

5
MVLPKLSEPYAVMPLLLRLQRFVGLWGERRYRYKFRLAFLSFCLLVVIPKVAFGYPDLE
TMVRGTAELIFEWNVLFGLMLFSLKLDDYDDL VYRYKDISKIAFRKDVPSQMGDYL VRI
NHRIDRFSKIYCCSHLCLAIFYWVAPSSSTYLAYLGARNRSVPVEHVLHLEEELYWFHTR
10 VSLVDYSIFTAIMLPTIFMLAYFGGLKLLTIFSNVKYCSAMLRLVAMRIQFMDRLDEREA
EKELIEIIVMHQKALKCVELLEIIFRWVFLGQFIQCVMIWCSLVLYVAVTGLSTKAANVG
VLFILLTVETYGFCYFGSDLTSEASCYSLTRAA YGSLWYRRSVSIQRKLRMVLQRAQKP
VGISAGKFCFVDIEQFGNMAKTSYSFYIVLKDQF

15

Figure 10b *This original figure
is cancelled*

Anopheles gambiae odorant receptor 6 partial amino acid sequence
(SEQ ID NO: 18)

5

LCLPDVAIAHVLFRIRQCTLDGGGDDVCCAPFSARESDFISCNILFLSRPHRRLDGYML
VKFVLFMLCFLIELLMLCAYGEDIVESPWGDZCRLRLRMVPGRVGGVPSIRAANYTPQP
AVRHTDRMENLAHPNEYFQSDPASFLVLLYPEDRLRE

10

Figure 11b

*This original figure
is cancelled.*

Anopheles gambiae odorant receptor 7 amino acid sequence (SEQ ID NO: 20)

5
MVLIQFFAILGNLATNADDVNELTANTITTLFFTHSVTKFIYFAVNSENFYRTLAIWNQT
NTHPLFAESDARYHSIALAKMRKLLVLVMATTVLSVVAWVTITFFGESVKTVLDKATN
ETYTVDIPRLPIKSWYPWNAMSGPAYIFSFIYQVRWRNGIMRSLMELSASLDTYRPNSSQ
10 LFRAISAGSKSELIINEEKDPDVKDFDLSGIYSSKADWGAQFRAPSTLQTFDENGNGNP
NGLTRKQEMMVRSIAKYWVERHKHVRLVSAIGDTYGPALLHMLTSTIKLTLLAYQA
TKIDGVNVYGLTVIGYLCYALAQVFLFCIFGNRLIESSSVMKAAYSCHWYDGSEEAKT
FVQIVCQCQKAMTISGAKFFTVSLELDFASVLGAVVTFMVLVQLK

15

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